Emissions, Energy and Economics

Billy Leung
Manager of Economic and Business Development
Regional Economic Models, Inc.

Why Economics?

Regional Economic Models, Inc. (REMI)

Provides Policy Insight® to assist our clients in predicting the economic and demographic effects of policy decisions on federal, state and local economies.

REMI has be used in over hundreds of energy and environmental studies in the last 25 years

- Selected articles and reports from these studies are available on request from REMI
- Studies include:
  - The Economic Effects of deregulation
  - Comprehensive 20-year Electric Plans
  - Impacts of the Kyoto Protocol on the West Virginia Economy
  - Utility Restructuring programs
  - Natural Gas Pricing (testimony)

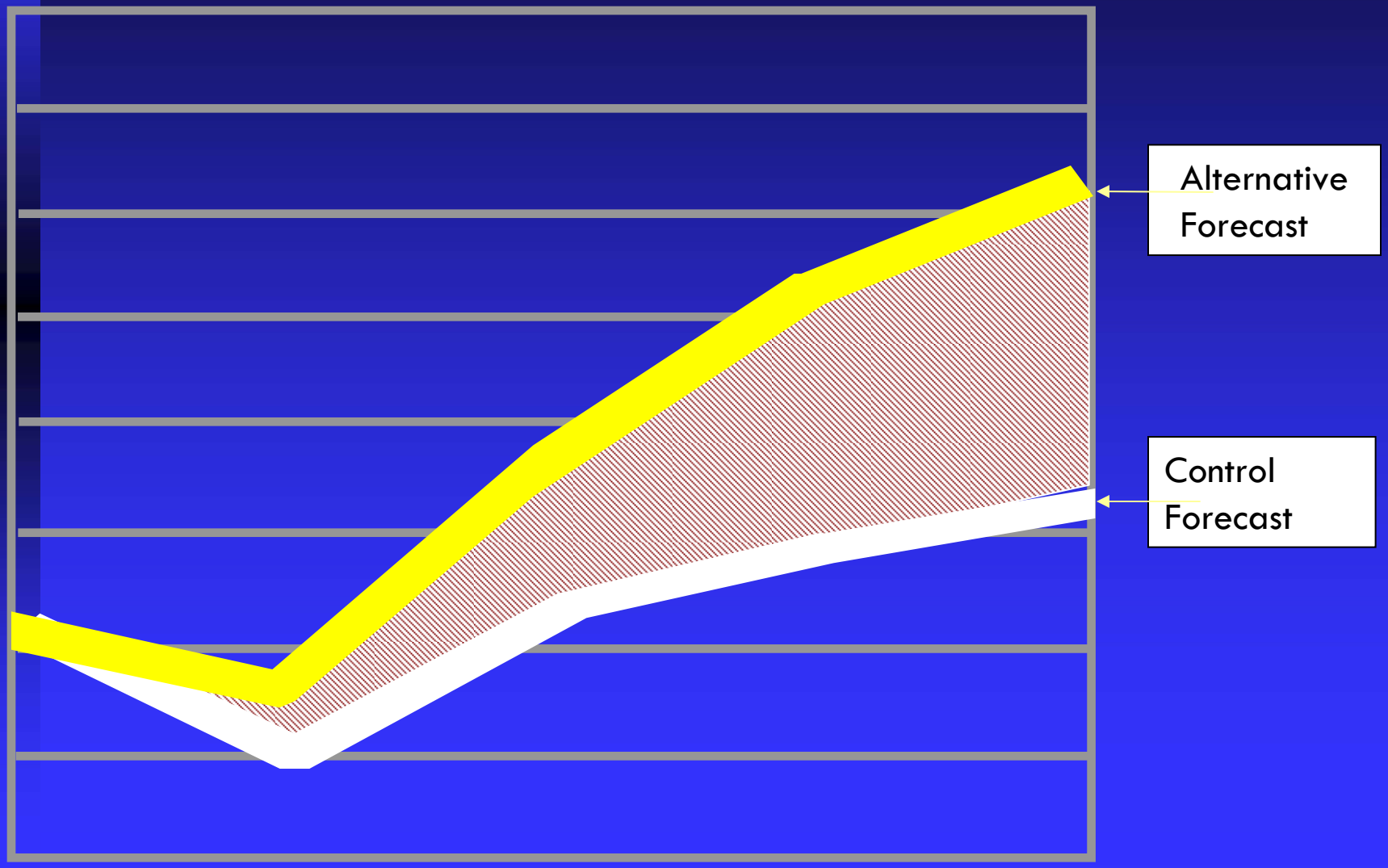
Personal Experience in Environmental and Energy

- Economic Impact of a Feebates Program to Connecticut
- Economic Impact of a Feebates Program to the Northeast
- Economic Impact of a Bio-Diesel Industry to the State of New York
- Economic Impact of Adapting to Alternative Energy Strategies
- The incorporation of Emissions into REMI Transight
- Worked on bridging the MARKAL, E-GAS, and ICF's IPM data with REMI Policy Insight
- Current Project - New Mexico's Clean Air Initiative
- Current Project - New Mexico's Energy Efficieny from Building Code Improvement
- Current Project – Minnesota's The Economic Impact from Better Air Quality

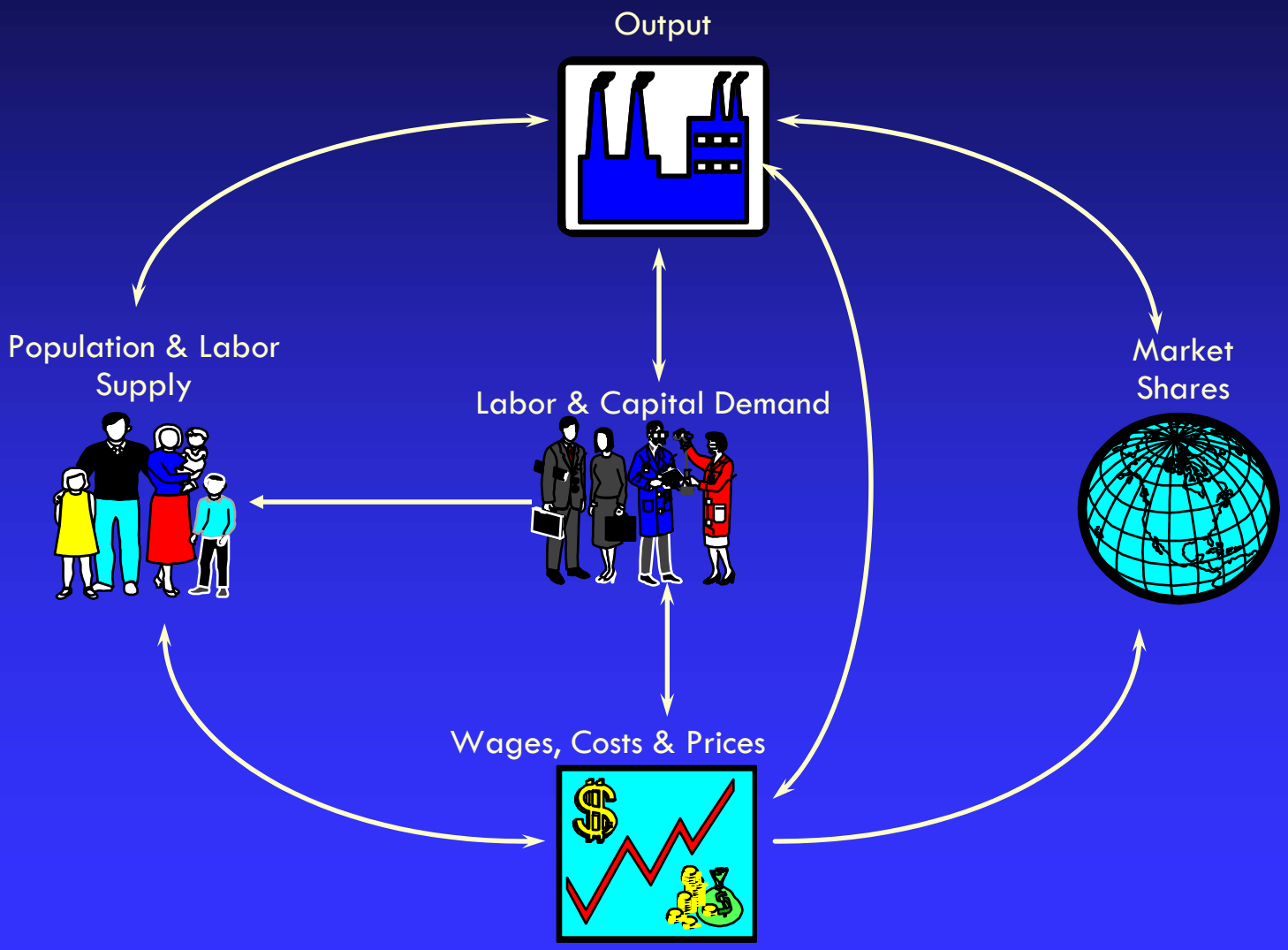
"What Does REMI Policy Insight Do?" and "What has to be Provided?"

- Policy Insight uses the "Direct Impact" of a scenario to calculate the "Indirect Effect."

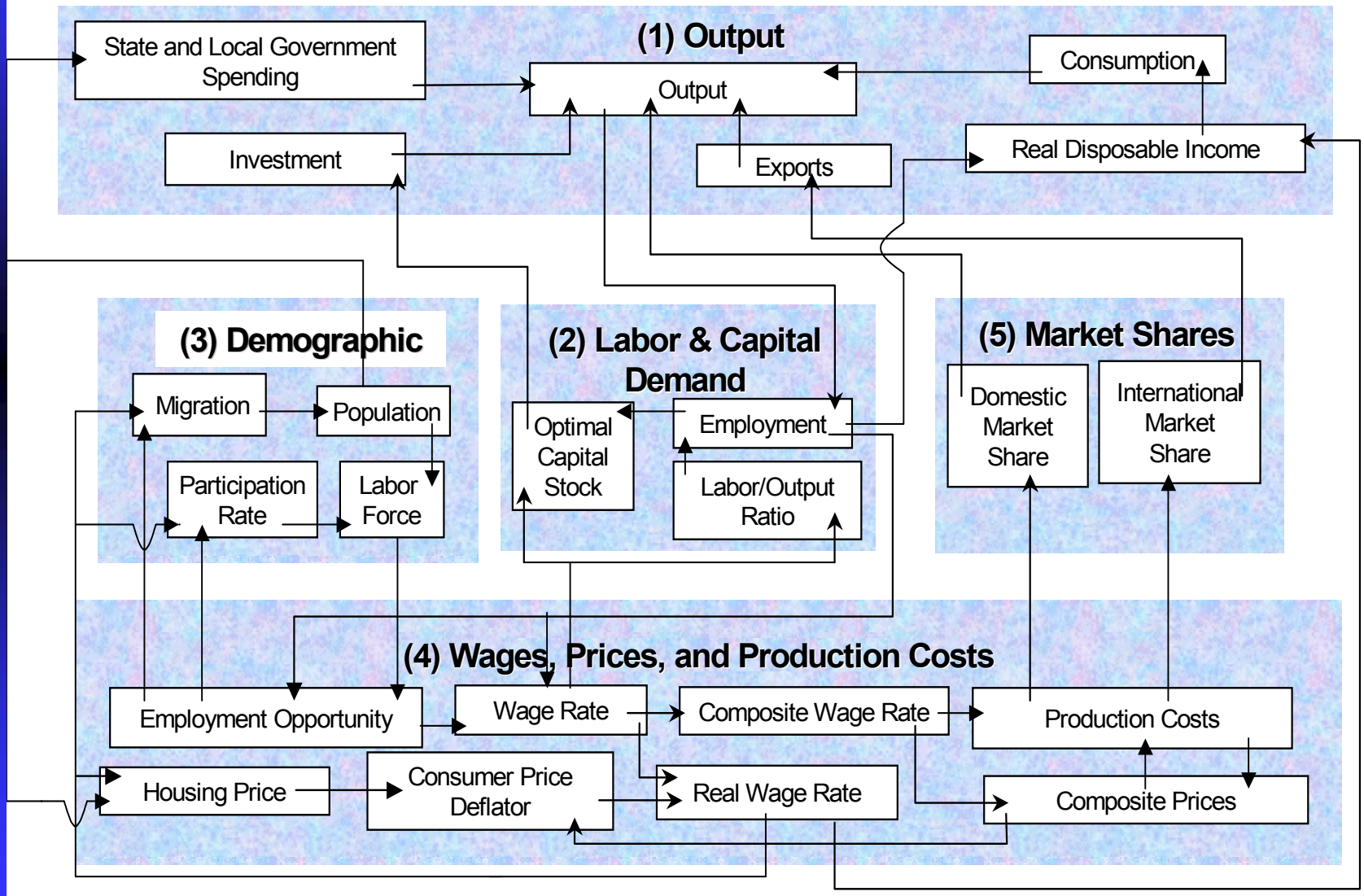
Where Does REMI come in?



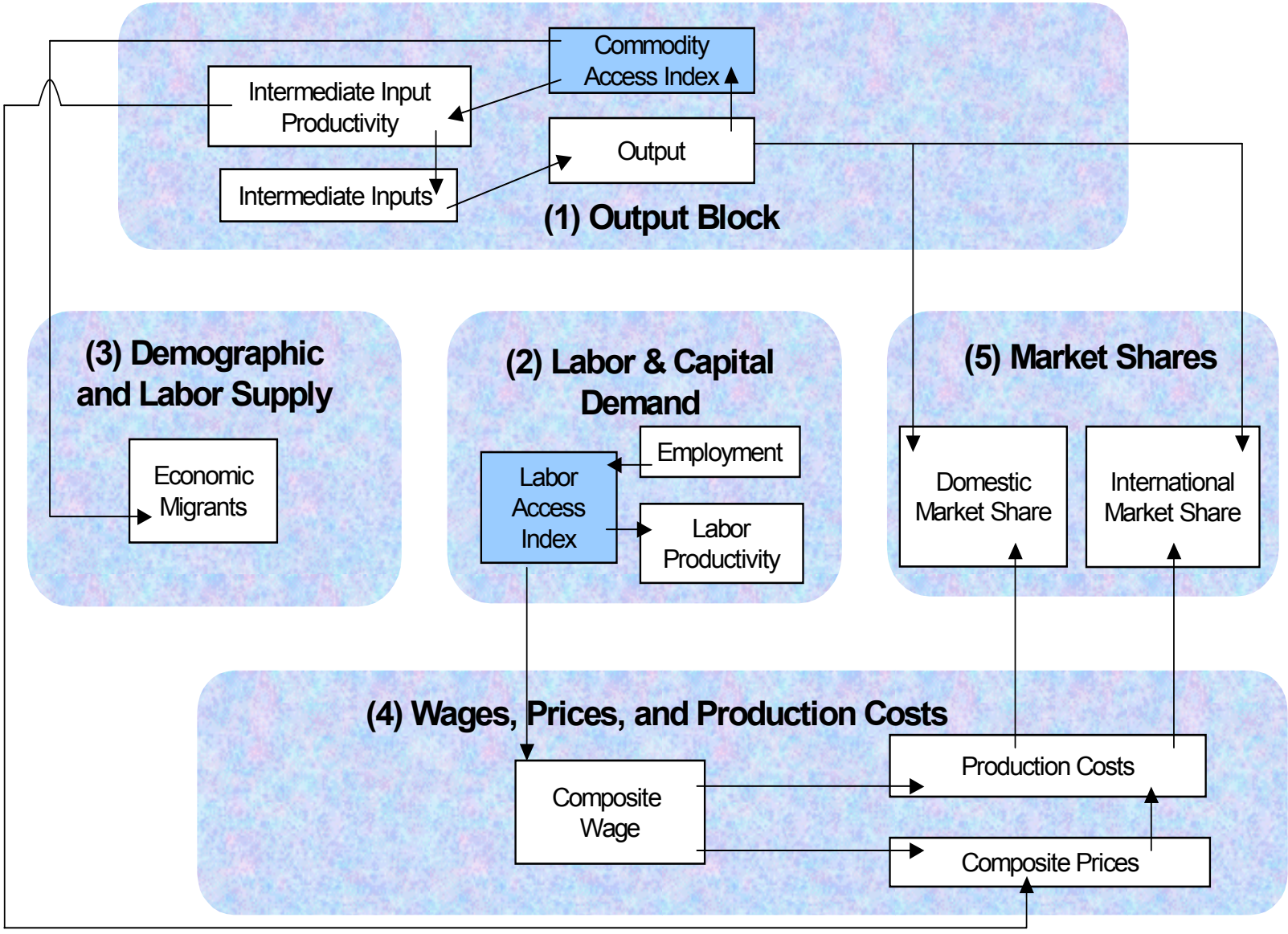
REMI Policy Insight Model Simplified



REMI Model Linkages (Excluding Economic Geography Linkages)



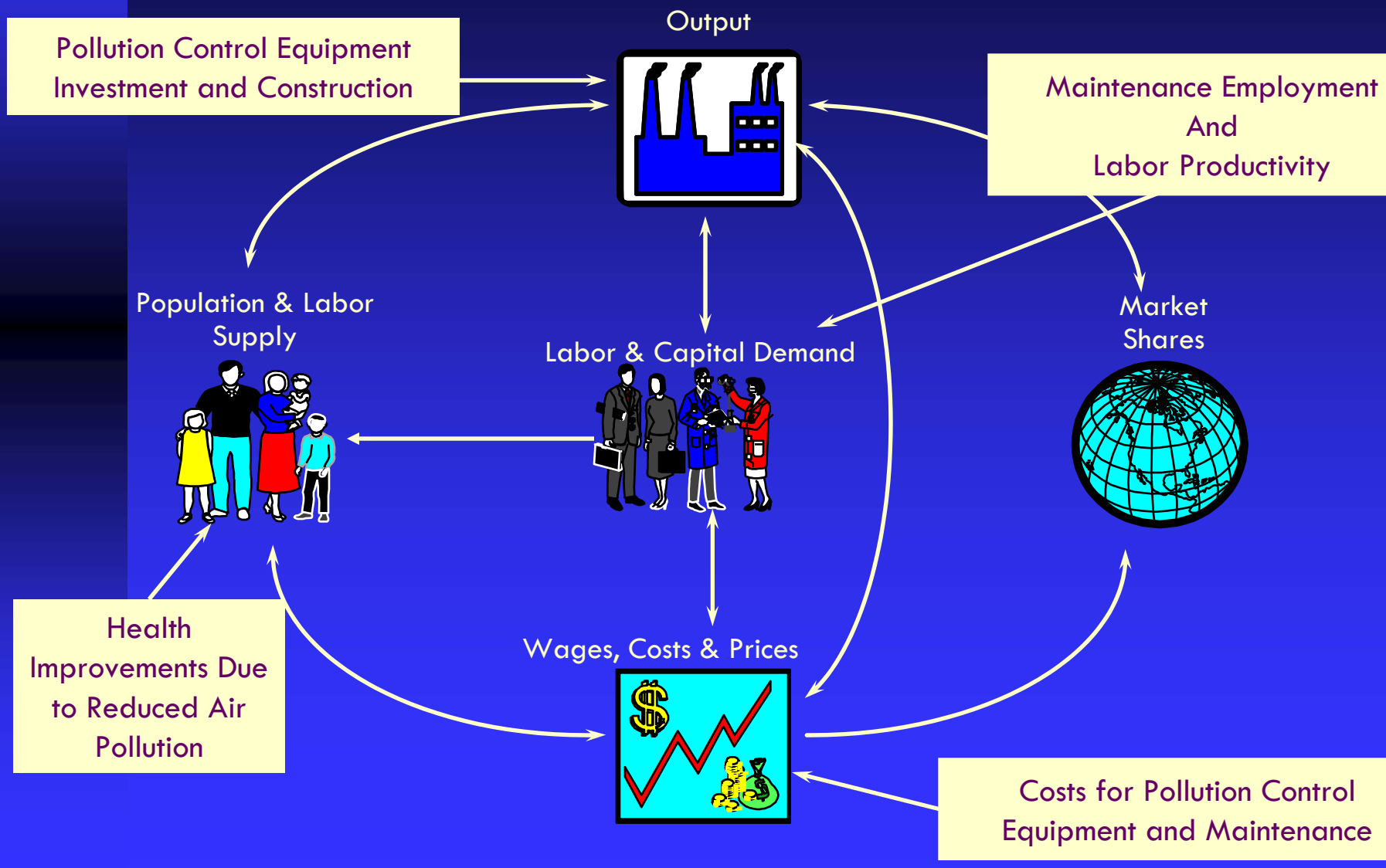
Economic Geography Linkages



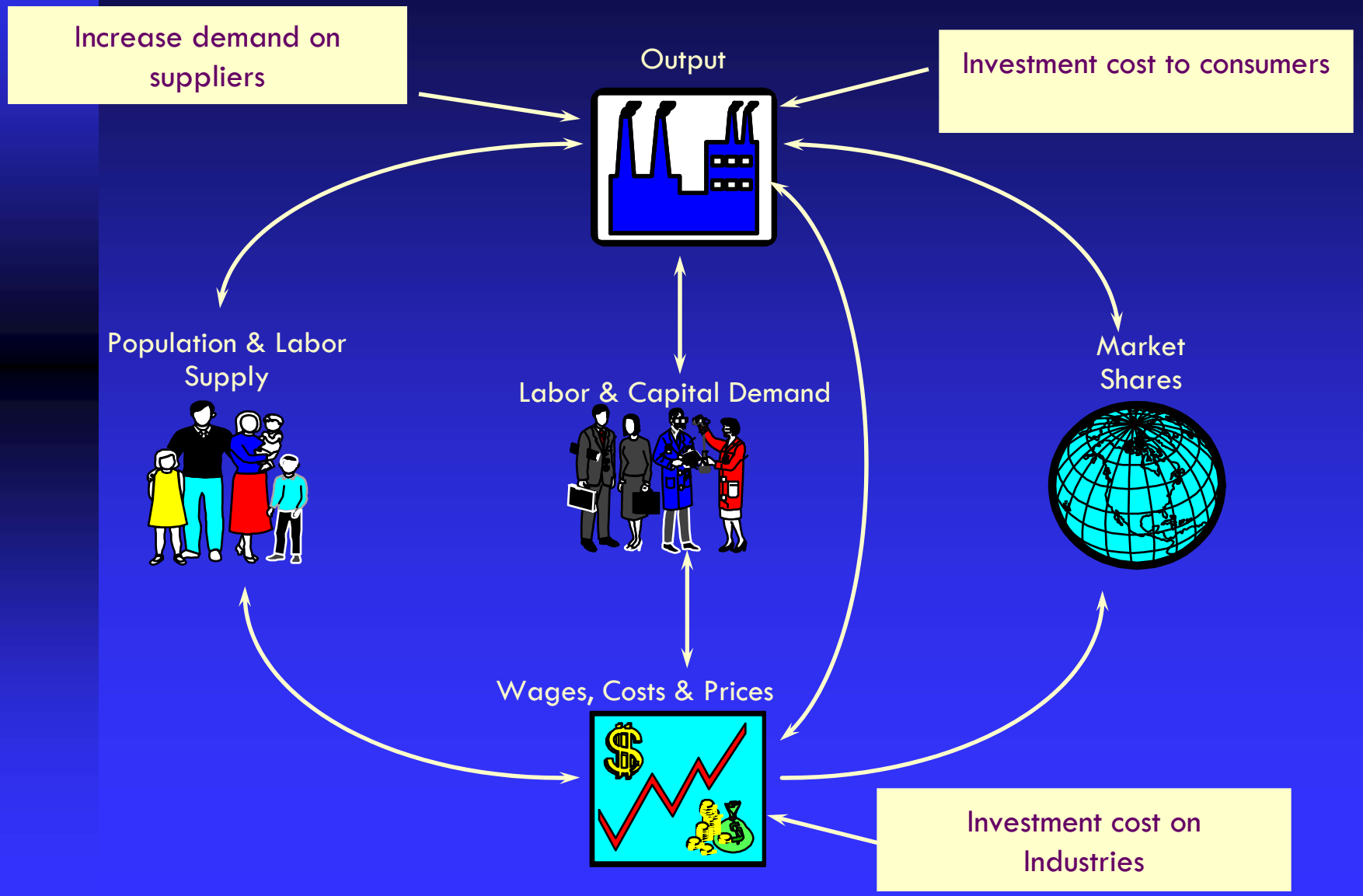
Who are the Winners and Losers?

- Consumers?
- Equipment Producers?
- Industry?
- General Public?
- Utilities?
- Government?
- Do winners and losers change over time?

Environmental Rules Changes



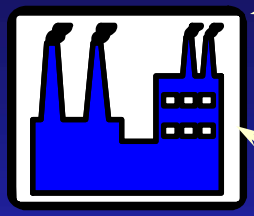
Part 1: Equipment and Construction Impact Direct



Part 2: Consumption and Labor Impacts

Labor Productivity

Output



- Demand change for energy purchased by residential consumers
- Consumption impact due to additional disposable Income
- Demand change for utility sector

Population & Labor Supply

Labor & Capital Demand

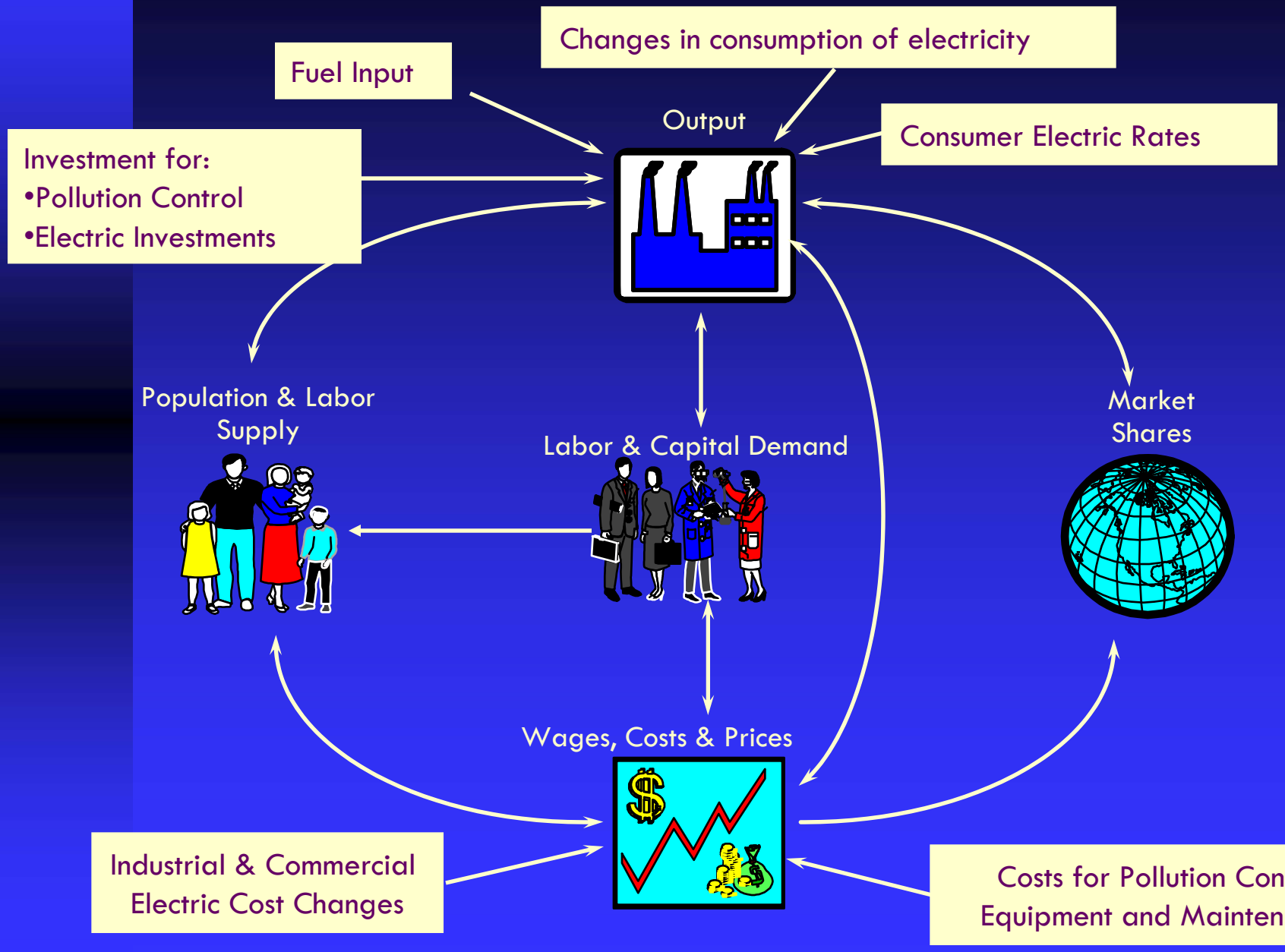
Market Shares

Health Improvements Due to Reduced Air Pollution

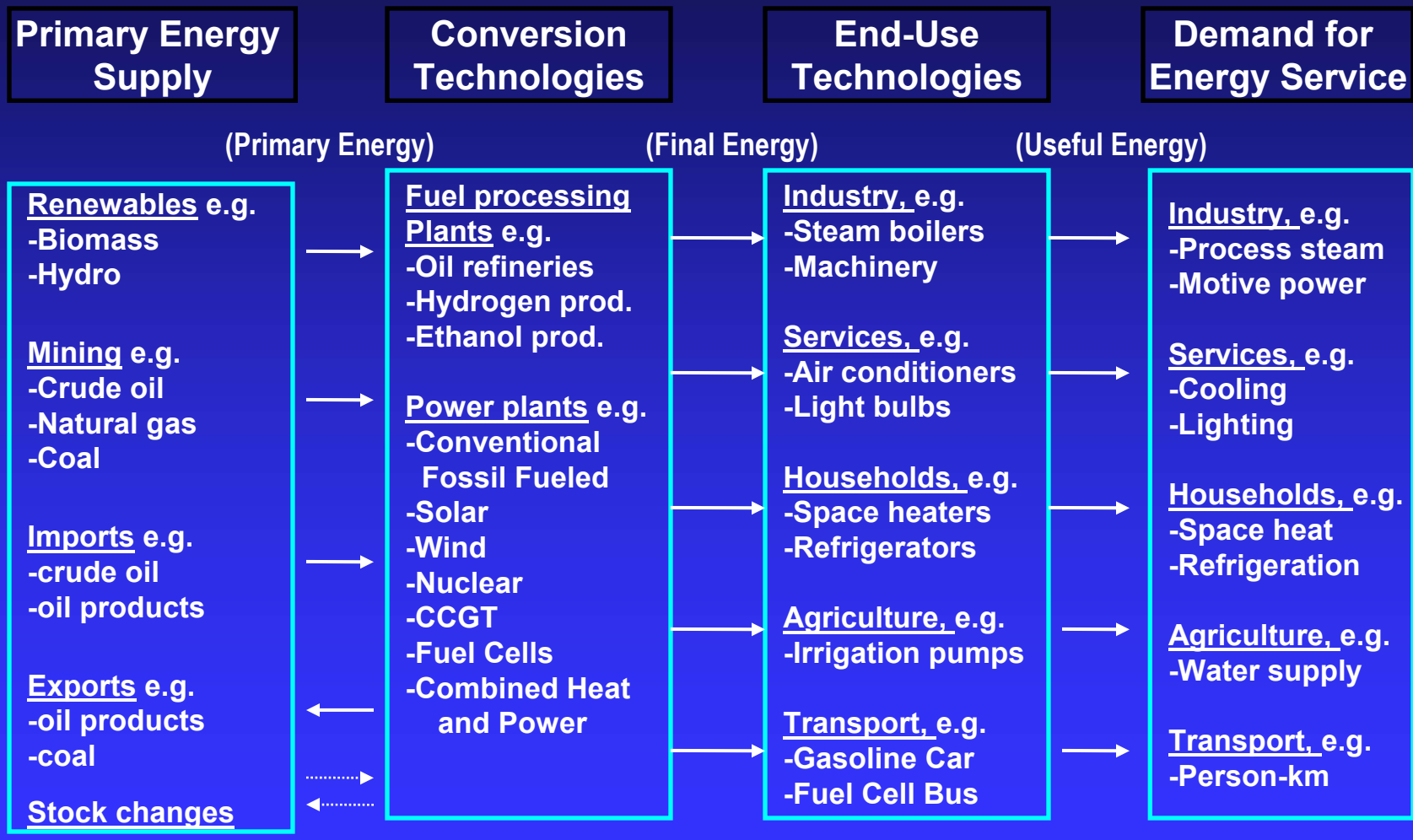
Wages, Costs & Prices

Energy cost savings for the industrial and commercial sectors

4. REMI Linked to Electric Systems Model



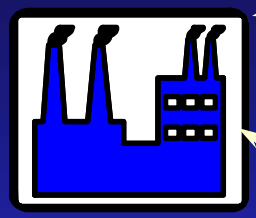
MARKAL/TIMES Energy Perspective



5. MARKAL Links to REMI Model Inputs

Direct demand changes by industry for investment, operation, changes in fuel use, and maintenance from service industry

Direct consumption changes due to new technologies (reallocation of total shifts)



Cost of fuel, operations, maintenance, and investment (annualized) for purchasing industries

International imports and exports

Effects by REMI Policy Insight include year-by-year predictions for:

- Gross State Product (State Economy)
- Personal Income
- Real Disposable Per Capita Incomes
- Changes in output and employment by industry
- Tax revenue and expenditure Impacts
- And approximately 5000 other economic and demographic indicators

What Makes REMI Policy Insight Unique?

- Integration of the key elements of General Equilibrium Theory, Econometrics, Input-Output Analysis, and the New Economic Geography in a dynamic consistent system
- Focus on regional policy analysis modeling for over 25 years and current installed user base of over 125 users in the U.S. and Europe
- Customized to the data of the regions being modeled
- Professional articles about all key elements of the model
- Structural cause and effect relationships
- Optional alternative structures allow sensitivity tests

Conclusion

- Environment, Energy and Economics are complex topics but analysts should not be afraid of modeling them accurately because inaccurate suggestions can lead to bad policy.

REMI's objective

Economic Theory

Policy Application